Practice Question Set For A-Level
Subject : Physics
Paper-1 Topic: Measurement And Their Errors

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Name of the Student:_____
Max. Marks : 17 Marks **Time : 17 Minutes**

Q1.

Which combination of an object's speed and journey time gives a distance travelled of 1 mm?

	Speed	Journey time	
A	10 μm s^{-1}	100 s	⬭
B	10 km s^{-1}	0.01 μs	⬭
C	1 nm s^{-1}	1 Gs	⬭
D	0.1 Mm s^{-1}	100 ns	⬭

(Total 1 mark)

Q2.

Which row only contains SI fundamental base units?

A A, kg, N, s ⬭

B A, K, mol, s ⬭

C C, kg, m, mol ⬭

D J, K, m, s ⬭

(Total 1 mark)

Q3.

A car travels at 100 km h^{-1} on a motorway.

What is an estimate of its kinetic energy?

A 10^4 J ⬭

B 10^6 J ⬭

C 10^8 J ⬭

D 10^{10} J ⬭

(Total 1 mark)

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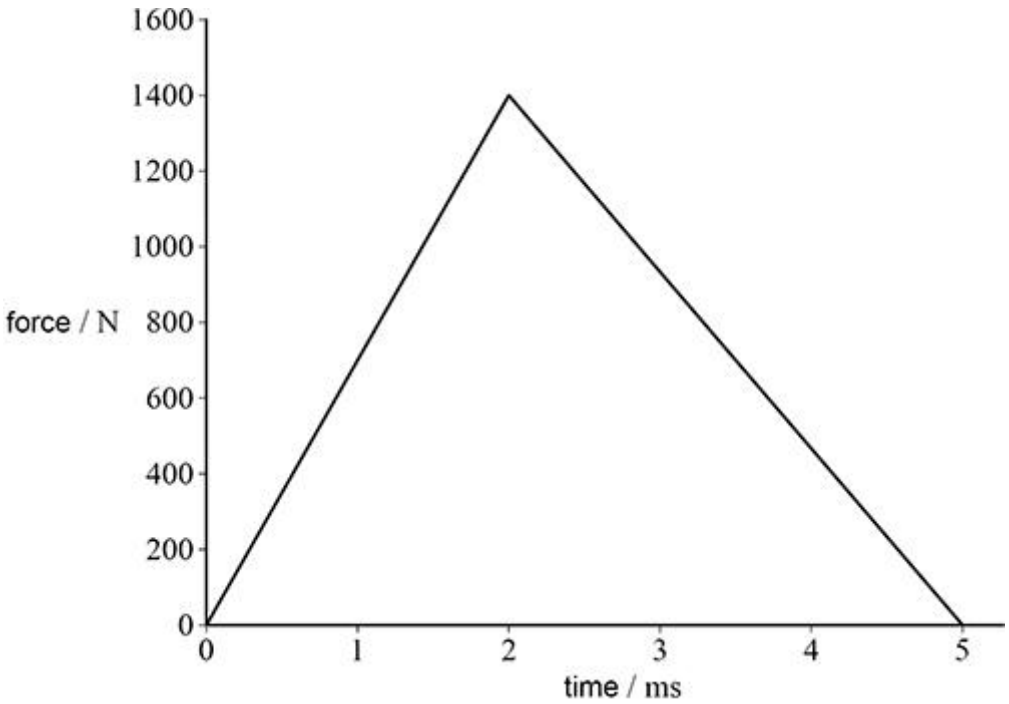
Q4.

A stationary ball is free to move. The ball is hit with a bat.

The graph shows how the force of the bat on the ball changes with time.



The ball has a mass of 0.044 kg.

What is the speed of the ball immediately after being hit?

A 13 m s^{-1} ⬭

B 60 m s^{-1} ⬭

C 80 m s^{-1} ⬭

D 160 m s^{-1} ⬭

(Total 1 mark)

Q5.

Which is approximately equal to 3 kW h?

A 3×10^3 J ⬭

B 1×10^4 J ⬭

C 2×10^5 J ⬭

D 1×10^7 J ⬭

(Total 1 mark)

Q6.

Which is the shortest distance?

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A 10^{-19} Gm ○

B 10^{-14} km ○

C 10^{-4} μm ○

D 10^{7} fm ○

(Total 1 mark)

Q7.

Which row shows SI unit prefixes in order of smallest value to largest value?

	Smallest			Largest	
A	p	n	c	μ	○
B	p	n	μ	c	○
C	n	p	c	μ	○
D	n	p	μ	c	○

(Total 1 mark)

Q8.

Mechanical power

A is a vector quantity. ○

B is measured in J. ○

C has base units of kg m^2 s^{-3}. ○

D can be calculated from force × distance moved. ○

(Total 1 mark)

Q9.

Water waves of wavelength λ and wave speed v are related by $v = \sqrt{k\lambda}$ where k is a constant.

What is a possible SI unit for k?

A m s^{-2} ○

B m s^{-1} ○

C $m^{\frac{3}{2}} s^{-1}$ ○

D $m^{\frac{1}{2}} s^{-1}$ ○

(Total 1 mark)

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Q10.

Which quantities can be written in the fundamental units kg m^{-1} s^{-2}?

A Tensile stress and kinetic energy ⬭

B The moment of a force and kinetic energy ⬭

C Young modulus and the moment of a force ⬭

D Young modulus and tensile stress ⬭

(Total 1 mark)

Q11.

What is the approximate average kinetic energy of a cyclist in a race?

A 10 J ⬭

B 10 kJ ⬭

C 10 MJ ⬭

D 10 TJ ⬭

(Total 1 mark)

Q12.

Which is a correct statement about mechanical power?

A It is a vector quantity. ⬭

B It is measured in J. ⬭

C In fundamental units, its unit is kg m^2 s^{-3} ⬭

D It can be calculated from force × distance moved. ⬭

(Total 1 mark)

Q13.

A load of 50 N is suspended from a wire that has an area of cross-section of 1 mm^2.

The stress in the wire, in Pa, is between

A 10^0 and 10^3 ⬭

B 10^3 and 10^6 ⬭

C 10^6 and 10^9 ⬭

D 10^9 and 10^{12} ⬭

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(Total 1 mark)

Q14.

Measurements are made to determine the tension, length and mass per unit length of a string stretched between two supports. The percentage uncertainties in these measurements are shown below.

Quantity	Percentage uncertainty
Length	0.80%
Tension	4.0%
Mass per unit length	2.0%

A stationary wave is formed on the string.

What is the percentage uncertainty in the calculated value of the frequency of the first harmonic?

A 1.8% ⬭

B 3.8% ⬭

C 6.8% ⬭

D 13% ⬭

(Total 1 mark)

Q15.

Which list puts the forces in order of increasing magnitude?

A 2 pN < 2 fN < 2 TN < 2 GN ⬭

B 2 pN < 2 fN < 2 GN < 2 TN ⬭

C 2 fN < 2 pN < 2 TN < 2 GN ⬭

D 2 fN < 2 pN < 2 GN < 2 TN ⬭

(Total 1 mark)

Q16.

Which is equivalent to the ohm?

A $J\,C^{-2}\,s^{-1}$ ⬭

B $J\,C^{-2}\,s$ ⬭

C $J\,s$ ⬭

D $J\,s^{-1}$ ⬭

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(Total 1 mark)

Q17.

1.0 kilowatt-hour (kW h) is equivalent to

A 6.3×10^{18} eV ⬭

B 6.3×10^{21} eV ⬭

C 2.3×10^{22} eV ⬭

D 2.3×10^{25} eV ⬭

(Total 1 mark)

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